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JAPANESE TRADE STUDIES

Special Industry Analysis
No. 18

POTASSIUM SALTS

Prepared for the
Foreign Economic Administration
by
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FOREWORD

This is one of a series of Special Industry Analyses discussing from a commodity or individual industry viewpoint the outstanding items entering into the trade of Japan proper with its Empire and with foreign countries. These analyses are a part of a larger project which includes compilations (annotated) of the imports and exports of Japan proper by sources and destinations; surveys of certain of the colonial areas, emphasizing their Empire and foreign trade and post-war problems relating thereto; an over-all study of the trade of Japan proper; and a survey of Japan's shipbuilding industry and shipping services and requirements in the pre-war period. In all of the studies Manchuria has been included as an Empire area owing to the political, economic, and military dominance of Japan in that area, especially during the last decade.

Most of the data in these analyses were taken from official and semi-official Japanese sources. Not only have errors and inconsistencies frequently been detected within individual volumes, but many data from different sources supposedly reporting on the same subject are irreconcilable.

The present report is one of a number which were prepared during 1944 and 1945 for the Foreign Economic Administration by members of the staff of the United States Tariff Commission. Owing to the desire of the Foreign Economic Administration to obtain this material as promptly as possible, the reports were not reviewed by the Tariff Commission. All statements of fact or opinion in these reports are attributable to the individual staff members who prepared them. The reports were originally intended for confidential use of Government agencies, but are now being made public with the consent of the Foreign Economic Administration.

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POTASSIUM SALTS

Introduction and summary.

The potassium salts are important to the agricultural and industrial economy of Japan. 1/ In the years immediately preceding the war about 15 percent of the potassium salts were consumed by industry and the remainder by agriculture as fertilizer. The potash (K_2O) 2/ content of the commercial fertilizers, however, represents only about 25 percent of the total potash (K_2O) consumed by Japanese agriculture, the remainder being obtained through "self-supply."

Before the war, consumption of potassium salts consisted principally of potassium chloride and potassium sulfate, and averaged annually about 72,000 metric tons in the 5-year period 1928-32 and increased to about 154,000 tons in the period 1933-37. Japanese supply depended almost entirely upon imports, which came principally from the United States and Germany. In the period 1928-32, total imports of the two salts averaged about 67,000 tons annually valued at 8 million yen, and increased to an annual average of about 143,000 tons valued at 18 million yen in 1933-37. Production of potassium salts from domestic raw materials was always small and amounted to an annual average of about 6,500 tons in 1928-32 and increased to about 12,000 tons in 1933-37. Exports consisted principally of reexports to Formosa and averaged about 1,216 and 1,645 metric tons in the period 1928-32 and 1933-37, respectively.

During the war, Japan was cut off completely from its major sources of supply. By 1942, the supply became so acute that potassium salts were put on the critical list and every effort was made to increase domestic output. The amounts obtained, however, are believed not to have exceeded 20,000 metric tons.

After the war, restriction on Japanese industry will tend to reduce the demand for potassium salts by industry and the curtailment of Japanese silk production and the likely general scarcity of foreign exchange might force Japanese agriculture to rely to a greater extent on "self-supply" to provide its available potash (K_2O). On the other hand if domestic output of agricultural products can be kept at a high level by applications of imported commercial fertilizers, the need for imports of essential foodstuffs would be smaller.

Based on this reduced industrial demand, to some extent smaller agricultural demand, and the lack of exchange, imports may approximate 100,000 to 125,000 tons of potassium salts annually. Assuming prewar unit values of imports, the total amount of exchange required would be about 16-20 million yen (4-5 million dollars), using 1939 rates of exchange.

1/ Throughout this study the term "Japan" is intended to include only Japan proper.

2/ The potassium content of fertilizers is reported in terms of potassium oxide, which is designated as "K_2O" or "potash (K_2O)."

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In addition to the potassium salts used in the manufacture of mixed fertilizers or applied directly to the soil, there are other sources of potash (K_2O) in Japan. These include commercial organic materials,-such as soybean cake and other oil cakes, as well as noncommercial materials such as green manure, compost, human and animan dung, and plant ashes. The noncommercial materials constitute what is referred to as "self-supply" and about three-fourths of the total fertilizer potash (K_2O) consumed in Japan is derived from these sources.

Summary of Japanese supply.

Table 1 summarizes the supply position of Japan proper in potassium salts from 1928 to 1939, the latest year for which data are available. Japanese production of potassium salts from domestic raw materials was small and averaged 6,421 tons in the 5-year period 1928-32 and increased to 12,346 tons in the period 1933-37. Production consisted principally of low-grade materials obtained as a byproduct from the manufacture of salt and small amounts of potassium chloride produced from domestic raw materials.

Imports, consisting of the chloride and the sulfate, increased from an annual average of 66,618 tons in the 5-year period 1928-32 to an average of 143,027 tons in 1933-37 and came from without the Japanese Empire. Exports consisting principally of reexports were relatively small and were destined for Empire areas, principally Formosa. These changes are reflected in the apparent consumption of all potassium salts, which increased from an annual average of 71,823 tons in the 5-years 1928 through 1932 to 153,727 tons in 1933-37, and reached a high of 262,695 tons in 1937.

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Table 1.- Potassium salts: Summary of production, imports, exports, and apparent consumption, Japan proper, annual, 1928-39, averages, 1928-32 and 1933-37

(In metric tons)

Year	Production 1/	Imports 2/ from—: Empire areas 3/	Imports 2/ from—: Other	Exports 2/ to—: Empire areas 4/	Exports 2/ to—: Other 5/	Apparent consumption 6/
1928	5,203	-	57,456	1,456	5/	61,203
1929	5,325	-	81,794	1,396	5/	85,723
1930	5,197	-	91,828	1,283	5/	95,742
1931	8,005	5	69,135	856	5/	76,289
1932	8,373	-	32,879	1,088	5/	40,164
Average, 1928-32	6,421	-	66,618	1,216		71,823
1933	9,979	-	57,087	1,259	5/	65,807
1934	9,170	-	94,738	777	5/	103,131
1935	8,755	-	161,489	1,343	5/	168,901
1936	18,185	-	150,549	662	5/	168,072
1937	15,640	-	251,272	4,189	28	262,695
Average, 1933-37	12,346	-	143,027	1,646	-	153,727
1938	8,115	-	170,013	4,797	28	173,303
1939	7,902	7/	162,529	7/	8/ 84	9/170,000

1/ Includes production of crude potassium salts and small amounts of potassium chloride produced from domestic raw materials; excludes potassium sulfate and industrial salts (see table 10 in the appendix) produced from imported raw materials.

2/ Includes potassium chloride and potassium sulfate (imports are shown separately in tables 4 and 5, exports in table 6).

3/ Not separately classified in the exports statistics of Formosa, Korea, and Mandated Islands. Statistics shown represent trade with Kwantung and Manchuria.

4/ Principally trade with Formosa, includes exports of potassium chloride and potassium sulfate, shown separately in table 6.

5/ Not separately classified in export statistics for Japan prior to 1937.

6/ Production plus imports less exports. Includes amounts consumed as fertilizer and chemical salts but does not include amounts produced from imported raw materials which are included under imports.

7/ Not available.

8/ Includes exports to Kwantung and Manchuria, if any.

9/ Estimated.

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Source: Production data compiled from the Hiryo Nenkan and Keizai Nenkan; imports and exports from official monthly and annual statistics of Foreign Trade of Japan.

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Table 2 summarizes the supply position of Japan in potassium chloride and potassium sulfate in the period 1936-38. Production and exports of potassium chloride were very small during this period and the supply consisted principally of imports from without the Empire. Japanese supply of potassium sulfate, in turn, consisted of imports and small amounts produced domestically from imported potassium chloride.

Table 2.- Potassium chloride and potassium sulfate: Summary of production, imports, exports, and apparent consumption, Japan proper, 1936-38

(In metric tons)

Year	Production 1/	Imports		Exports 2/		Apparent consumption 3/
		From Empire areas	Other	To Empire areas	Other	
Potassium chloride:						
1936	285	-	78,924	540	-	78,669
1937	488	-	111,167	335	4/	111,320
1938	136	-	57,628	1,020	28	56,716
Potassium sulfate: 5/						
1936	823	-	71,625	122	6/ 77	72,249
1937	7,771	-	140,105	3,851	4/	144,025
1938	13,557	-	112,385	3,732	6/ 46	122,164

1/ Does not include chemical salts produced from imported raw materials, which are shown separately in table 10 in the appendix.

2/ Export data are not strictly comparable with official monthly and annual statistics of Foreign Trade of Japan shown in table 6.

3/ Production from domestic raw materials plus imports less exports. Includes imports destined for fertilizer and industrial uses.

4/ Reported as 14 metric tons in official import statistics.

5/ Production data shown represent production of potassium sulfate from imported potassium chloride.

6/ Not shown in official statistics.

Source: Compiled from the Hiryo Nenkan, 1938-40.

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Production.

Data on the production of potassic fertilizer salts in Japan are shown in table 3 for the period 1928-39, and production of the chemical salts, principally from imported raw materials, is shown in table 10 of the appendix for the period 1928-38. The average annual production of fertilizer salts increased from 6,644 metric tons in the period 1928-32 to 14,135 tons in 1933-37 and amounted to 23,411 and 21,672 tons in 1937 and 1938, respectively.

With the exception of 1937 and 1938, when the production of potassium sulfate amounted to 7,771 and 13,557 tons, Japanese production consisted almost entirely of potassium salts other than the sulfate and chloride. These salts consisted principally of low-grade material obtained from byproduct salt bitterns and sea water. Their production was located in the prefectures of Kanagawa and Osaka in 1937 and Mie and Shiga in 1938 (see table 11 in the appendix) and averaged about 6,400 tons annually in the period 1928-32 and about 12,000 tons in 1933-37.

Only small amounts of potassium chloride were produced from domestic raw materials, such as sea water, salt bitterns, and kelp. The average annual production in the 5-year period 1928-32 only amounted to about 100 tons and increased to about 350 tons in the period 1933-37. In 1937 and 1938, production was located in the prefectures of Osaka and Mie, respectively (see table 11 in the appendix).

The production of potassium sulfate from domestic raw materials was small before the war. The data shown in table 3 represent production principally from imported potassium chloride, which averaged about 223 tons annually in the period 1928-32 and increased to an average of 1,789 tons in 1933-37. In 1937 and 1938, production of the sulfate increased considerably and amounted to 7,771 and 13,557 tons, respectively, most of which was produced in Kanagawa and Chiba Prefectures. (See table 11 in the appendix.)

Production of the principal industrial salts consisted chiefly of chemical grade potassium salts which were used by industry as such or in the manufacture of other industrial potassium salts. (See appendix, table 10.)

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Table 3.- Potassium salts: 1/ Production, Japan proper, annual, 1928-39, averages, 1928-32 and 1933-37

(In metric tons)

Year	Potassium chloride 2/	Potassium sulfate 3/	Other potassium salts 2/	Total production 4/
1928	-	600	5,203	5,803
1929	180	68	5,145	5,393
1930	142	207	5,055	5,404
1931	77	36	7,928	8,041
1932	105	203	8,268	8,576
Average, 1928-32	101	223	6,320	6,643
1933	196	182	9,783	10,161
1934	262	122	8,908	9,292
1935	525	45	8,230	8,800
1936	285	823	17,900	19,008
1937	488	7,771	15,152	23,411
Average, 1933-37	351	1,789	11,995	14,135
1938	136	13,557	7,979	21,672
1939	5/	8	7,902	7,910

1/ Production of industrial salts, principally from imported raw materials, are shown in table 10 in the appendix.
2/ Produced from domestic raw materials.
3/ Produced principally from imported raw materials.
4/ Includes production from domestic and imported raw materials.
5/ Not available, included in "other potassium salts."

Source: Compiled from the Hiryo Nenkan, Keizai Nenkan and statistical abstracts of the Ministry of Agriculture and Forestry, Japan, 1935-36.

Imports.

Tables 4 and 5 summarize imports of potassium chloride and potassium sulfate by principal sources of origin and show total value of imports in the period 1928-39 and estimates of total imports in 1940.

With the exception of 5 tons in 1931, all imports of potassium chloride into Japan proper (table 4) came from without the Empire. Imports amounted to an annual average of 23,250 tons, with an average annual value of about 2.7 million yen, in the 5-year period 1928-32 and increased to 69,305 tons, with an average annual value of about 9.3 million yen, in the period 1933-37. In 1937, imports of potassium chloride reached a high of 111,167 tons, valued at 15.8 million yen.

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Table 2.- Potassium chloride: Imports into Japan, total quantity and value by principal sources of origin, annual, 1928-40, average 1928-32 and 1933-37

(Quantity in metric tons; value in thousands of yen)

Year	Quantity						Value
	United States	Germany	France	Spain	All other countries	Total	
1928	13,762	1,986	203	3,655	2,493	22,099	2,302
1929	20,340	3,705	203	-	3,843	27,591	3,078
1930	13,829	6,851	2,488	-	743	23,911	2,665
1931	20,463	2,893	4,068	403	643	1/ 28,470	3,286
1932	5,086	1,117	820	7,086	102	14,181	1,825
1933	17,550	3,210	1,556	2,329	1,565	23,250	2,703
Average, 1928-32	16,635	62	320	16,773	317	33,707	5,011
1933	20,264	8,028	3,316	7,730	6,525	45,863	5,788
1934	45,614	3,377	6,656	13,435	7,784	76,866	8,935
1935	53,918	6,182	11,237	3,828	3,759	78,924	10,554
1936	49,143	24,792	18,590	-	8,644	111,167	15,787
1937	37,034	10,488	8,024	8,353	5,406	69,305	9,282
Average, 1933-37	39,155	10,950	3,925	-	4,500	57,628	8,460
1938	2/	2/	2/	2/	2/	72,258	11,016
1939	2/	2/	2/	2/	2/	3/ 72,000	2/
1940							

1/ Includes 5 metric tons of potassium chloride from Empire sources.
2/ Not available.
3/ Estimate based on actual United States exports plus certain tons for Spain.

Source: Compiled from official monthly and annual statistics of foreign trade of Japan.

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The United States supplied about half of Japan's imports of potassium chloride, while the principal members of the International Potash Cartel (Germany, France, and Spain) supplied most of the remainder. Imports of the chloride from the United States averaged about 12,700 metric tons in the period 1928-32 and increased to an annual average of about 37,000 in the period 1933-37. Imports from Germany increased from an average of about 3,000 tons in 1928-32 to 10,500 tons in 1933-37; and imports from France amounted to about 1,500 and 8,000 tons in the same periods. Imports from Spain were negligible and stopped in 1937 owing to the disruption of the Spanish potash industry by civil war. Small quantities of the chloride came variously from the Soviet Union, Poland, and Palestine.

All imports of potassium sulfate into Japan proper (table 5) came from abroad and averaged about 43,369 metric tons, with an average value of about 5.3 million yen in the 5-year period 1928-32, and increased to 72,722 tons, with an average value of about 8.5 million yen, in the period 1933-37. In 1937, imports amounted to 140,105 tons, valued at 14.7 million yen and in 1938, 112,385 tons, valued at 17 million yen.

Table 5.- Potassium sulfate: Imports into Japan, total quantity and value, by principal sources of origin, annual, 1928-40, and averages, 1928-32 and 1933-37

(Quantity in metric tons; value in thousands of yen)

Year	Quantity				Value
	Germany	France	All others	Total	
1928	31,725	406	3,226	35,357	4,494
1929	49,286	497	4,519	54,203	6,672
1930	64,185	152	3,660	67,997	7,720
1931	30,604	8,426	1,640	40,670	4,398
1932	13,926	3,956	813	18,695	2,110
Average, 1928-32	37,945	2,668	2,770	43,384	5,338
1933	17,666	4,675	49	23,380	3,258
1934	45,179	2,942	758	48,879	6,864
1935	75,144	7,298	4,191	84,633	10,217
1936	58,640	12,092	903	71,635	9,589
1937	127,504	12,381	260	140,105	12,736
Average, 1933-37	65,022	7,378	830	73,742	8,646
1938	96,168	13,652	2,565	112,385	16,802
1939	1/	1/	1/	80,271	13,[illegible]
1940	1/	1/	1/	1/	1/

1/ Not available.
2/ Estimated.

Source: Compiled from official monthly and annual statistics of foreign trade of Japan.

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Imports of the sulfate came principally from Germany, and small amounts were imported from France. German imports averaged about 38,000 metric tons in the 5-year period 1928-32 and increased to 65,000 in the period 1933-37. There were no imports from the United States, as potassium sulfate was first produced in the United States in 1940.

Exports.

Japanese exports of potassium chloride and potassium sulfate are shown in table 6. Exports were small and consisted principally of re-exports to Formosa (Taiwan). Exports of the chloride averaged about 306 tons, with an average annual value of about 39,000 yen in the 5-year period 1928-32, and 439 tons, with an average value of about 60,000 yen in 1933-37. Exports of potassium sulfate were somewhat larger and averaged 910 tons, with an average annual average of about 117,000 yen, and 1,207 metric tons, with an average value of about 117,000 and 183,000 yen in the periods 1928-32 and 1933-37, respectively. Exports of potassium sulfate reached a high in 1937 and 1938, when 3,864 tons, valued at 601,000 yen and 3,777 tons, valued at 619,000 yen, respectively, were exported.

Table 6.- Potassium chloride and potassium sulfate: Exports from Japan, quantity and value, annual, 1928-38, and averages, 1928-32 and 1933-37

(Quantity in metric tons; value in thousands of yen)

Year	Potassium chloride			Potassium sulfate		
	Quantity		Value	Quantity		Value
	To Empire areas 1/	Other		To Empire areas 1/	Other	
1928	-	2/	-	1,456	2/	187
1929	551	2/	67	845	2/	108
1930	494	2/	61	789	2/	97
1931	275	2/	33	581	2/	70
1932	211	2/	25	877	2/	121
Average, 1928-32	306	2/	39	910	2/	117
1933	319	2/	55	940	2/	156
1934	385	2/	51	392	2/	57
1935	614	2/	66	729	2/	94
1936	540	2/	72	122	2/	17
1937	339	14	52	3,850	14	601
Average, 1933-37	439	-	60	1,207	3	183
1938	1,090	28	56	3,777	23	619
1939	4/	81	4/	4/	3	4/

1/ Principally trade with Formosa.
2/ Not separately classified prior to 1937.
3/ Less than 1 metric ton. 4/ Not available.

Source: Compiled from official monthly and annual statistics of foreign trade of Japan.

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Consumption.

The total apparent consumption of potassium salts in Japan is summarized in Table 7 for the period 1928-40. In general, from 20,000 to 30,000 tons of potassium salts, or about 10-15 percent, were consumed by Japanese industry (production data for the more important salts are shown in table 10 of the appendix). Of the remainder, about one-third was applied directly to the soil and two-thirds was consumed in commercial fertilizers. The sulfate was consumed principally as a fertilizer material, and the chloride as a fertilizer material as well as a raw material for the production of fertilizer potassium sulfate and the industrial potassium salts.

In the 5-year period 1928-32, the average annual consumption of potassium salts amounted to 71,823 tons and increased to 153,721 tons in the period 1933-37. The highest level of consumption was reached in 1937, when 262,695 tons were consumed in agricultural and industrial uses.

Table 7.- Potassium salts: Apparent consumption 1/ in Japan, annual, 1928-40, and averages, 1928-32 and 1933-37

(In metric tons)

Year	Potassium chloride	Potassium sulfate 2/	Other potash salts 3/	Total
1928	22,099	33,901	5,205	61,205
1929	27,220	33,358	5,145	65,723
1930	23,559	67,128	5,055	95,742
1931	28,272	40,089	7,928	76,289
1932	14,075	17,821	8,268	40,164
Average, 1928-32	23,045	42,459	6,320	71,823
1933	33,584	22,440	9,783	65,807
1934	45,740	48,483	8,908	103,131
1935	76,777	83,894	8,230	168,901
1936	78,609	71,503	17,900	168,072
1937	111,302	136,241	15,152	262,695
Average, 1933-37	69,214	72,512	11,995	153,721
1938	56,716	108,608	7,979	173,303
1939	4/ 72,177	4/ 90,268	7,902	4/ 170,347
1940	4/ 72,000	4/ 3,000	4/ 10,000	4/ 85,000

1/ Includes amount consumed in agricultural and industrial uses.
2/ Does not include production from imported potassium chloride.
3/ Includes low grade salts.
4/ Estimated.

Source: Production data compiled from the Hiryo Nenkan and Keizai Nenkan; Imports and exports from official monthly and annual statistics of foreign trade of Japan.

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Contrary to agricultural practice in other countries, the consumption of potassium sulfate in Japan exceeded the consumption of potassium chloride, and averaged about 42,500 tons in the 5-year period 1928-32 as against an average of about 23,000 tons of potassium chloride. In the 5-years 1933-37, the average annual consumption of both salts was about the same, amounting to an annual average of about 72,500 and 69,000 tons, respectively. The annual average consumption of other potassium salts amounted to 6,320 tons in the period 1928-32 and increased to 11,995 tons in 1933-37. In 1937, the largest consumption year, the consumption of potassium chloride amounted to 111,302 tons; potassium sulfate to 136,241 tons, and other potash salts to 15,152 tons. The largest consuming prefectures in 1937 were Gumma, Ibaraki, Saitama, Toyama, Niigata, Tochigi, and Okayama. The amounts of potassium salts consumed in direct application are shown by prefectures in table 12 in the appendix.

Table 8 shows the total consumption of fertilizer potash (K_2O) for the fertilizer years 1929 through 1937, and gives the amount of actual potash (K_2O) and percent of the total supplied by commercial fertilizers and by "self-supply." In general, Japanese agriculture is primarily dependant upon self-supply for about three-fourths of its potash (K_2O). The consumption of the potash (K_2O) contained in green manure, compost heaps, human and animal dung, and plant ashes has increased more slowly and fluctuated less than the consumption of potash (K_2O) contained in commercial fertilizers.

In the 4-year period 1929-32 the average annual consumption of fertilizer potash (K_2O) in Japan amounted to 301,450 tons and increased to an annual average of 384,411 tons of K_2O in the 5-year period 1933-37. Of the total potash (K_2O) consumed in the period 1929-32, commercial fertilizers supplied an average of 61,068 tons, or 20.3 percent of the total consumption of K_2O, as against 240,381 tons, or 79.7 percent obtained through self-supply. In the following period, 1933-37, commercial fertilizers supplied an annual average of 95,899 tons of K_2O, or 25 percent of the total, and self-supply, 288,512 tons, or 75 percent of the total consumption of potash (K_2O). In 1937, total consumption of fertilizer potash (K_2O) reached a high and amounted to 464,574 tons, of which 158,738 tons, or 34 percent, was supplied in the form of commercial fertilizers, and 305,836 tons, or 66 percent, was obtained from "self-supply."

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Table 8.- Fertilizer potash (K_2O): Total consumption by kinds, in Japan, annual 1/, 1929-37, averages 1/, 1929-32 and 1933-37

(Quantity in metric tons)

Year	Commercial fertilizers 2/		Self-supply 3/		Total quantity in terms of K_2O
	Quantity	Percent of total	Quantity	Percent of total	
1929	68,206	23.5	222,636	76.5	290,842
1930	72,443	23.9	230,251	76.1	302,694
1931	62,262	19.5	257,328	80.5	319,590
1932	41,362	14.1	251,310	85.9	292,672
Average, 1929-32	61,068	20.3	240,381	79.7	301,450
1933	44,329	14.1	269,316	85.9	313,645
1934	72,973	20.8	278,559	79.2	351,532
1935	103,767	26.1	294,425	73.9	398,192
1936	99,689	25.3	294,425	74.7	394,114
1937	158,738	34.2	305,836	65.8	464,574
Average, 1933-37	95,899	25.0	288,512	75.0	384,411

1/ Fertilizer year.

2/ In terms of potash (K_2O) content; includes potash (K_2O) contained in commercial potassium salts as well as commercial organic fertilizer materials.

3/ Includes the Potash (K_2O) contained in green manure, compost heaps, human and animal dung and plant ashes.

Source: Compiled from the Hiryo Nenkan, 1939.

Table 9 shows the per capita and per acre consumption of the potash (K_2O) contained in the commercial fertilizers and self-supply for the period 1929-37. In the period 1929-32, the total potash (K_2O) consumed per acre in Japan averaged about 45.4 pounds per acre and increased to 57 pounds of K_2O in the period 1933-37. Likewise, the per capita consumption increased from an annual average of 10.3 pounds of K_2O to 13.2 pounds. Potash (K_2O) consumed as commercial fertilizers increased from an annual average of 9.2 pounds per acre in the first period to 14.2 pounds of K_2O in 1933-37; and the per capita consumption increased from an annual average of 2.1 pounds of K_2O in the first period to 3.0 pounds in the second.

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No comparison of total potash (K_2O) consumption in Japan and other countries can be made, as data on self-supply and potash (K_2O) contained in organic fertilizer materials in countries other than Japan are not available. In general, however, the percentage due to self-supply in other countries is not as high as in Japan, and occidental agriculture depends to a larger extent on the potash (K_2O) contained in potassium salts than does Japanese agriculture.

Table 9.- Potash (K_2O): Per capita and per acre consumption in Japan, annual 1/, 1929-37, and average, 1929-32 and 1933-37

(In pounds of potash (K_2O))

Year	Commercial fertilizer		Self-supply		Total	
	Per acre	Per capita	Per acre	Per capita	Per acre	Per capita
1929	2/ 10.3	2/ 2.4	2/ 33.6	2/ 7.7	2/ 43.9	2/ 10.1
1930	2/ 10.9	2.5	2/ 34.6	7.9	2/ 45.5	10.4
1931	2/ 9.4	2.1	2/ 38.7	8.7	2/ 48.1	10.8
1932	2/ 6.2	1.4	2/ 37.7	8.4	2/ 43.9	9.8
Average, 1929-32	9.2	2.1	36.1	8.2	45.4	10.3
1933	6.6	1.5	40.3	18.8	46.9	10.5
1934	10.0	2.4	41.5	9.0	52.4	11.4
1935	15.4	3.3	43.7	9.4	59.1	12.7
1936	14.7	3.1	43.5	9.2	58.2	12.3
1937	23.4	4.9	45.3	9.5	68.7	14.4
Average, 1933-37	14.2	3.0	42.9	9.2	57.1	12.2

1/ Fertilizer year.
2/ Estimated.

Source: Compiled from the Japan Yearbook, 1940-41 and the Hiryo Nenkan, 1939.

The per acre consumption of fertilizer potassium salts in Japan exceeds by far the per acre consumption in the United States, and almost equals that of Germany, which is the world's largest per acre consumer of potash salts. If self-supply were added, Japan would exceed all countries in the per acre consumption of K_2O. This is due to large potash (K_2O) depletion caused by intensive cultivation of the soil in Japan.

In the period 1933-37, United States per acre consumption of K_2O in commercial fertilizer increased from 1 to 2 pounds per acre, while Japanese consumption increased from 6.6 to 23.4 pounds of K_2O per acre. Although comparable data are not available for Germany, consumption of potassic fertilizer salts in terms of potash (K_2O) was 19.5 pounds per acre in 1926, and increased to 25.3 pounds of K_2O per acre in the fertilizer year 1935 and 36.7 pounds in 1938. The per capita consumption of potash (K_2O), on the other hand, was lower in Japan than the United States. In the period 1933-37, the annual per capita consumption in Japan increased from 1.5 to 4.9 pounds of potash (K_2O), while United States consumption increased from 4.6 in 1933 to 9.1 pounds of K_2O in 1936 and fell to 6.8 pounds of potash (K_2O) in 1937.

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Stocks.

No information is available concerning stocks of potassium salts in Japan, but it is believed that little or no surplus potassium salts were available in Japan by 1942.

Government control.

The Japanese Government first instituted price control for the potassium salts on September 4, 1938, when the Japanese Ministry of Agriculture and Forestry and the Minister of Commerce and Industry fixed the import price of potassium sulfate at yen 162 per metric ton and yen 166 for potassium chloride.

On July 13, 1939, an ordinance controlling the import, sale, and distribution of potassium chloride was promulgated jointly by the two ministries, chiefly to forestall further price increases resulting from the decrease in supply brought about by exchange control regulations. The distribution of the available supply was controlled by a predetermined quota system.

Wartime supply.

In 1940, the available supply of potassium salts in Japan decreased to about 85,000 metric tons. Imports of potassium sulfate were curtailed severely by the war in Europe, and imports of potassium chloride decreased as a result of Japanes exchange control regulations as well as the European war. It is estimated that in 1940, about 72,000 tons of the chloride were imported from the United States and Spain; and imports of potassium sulfate amounted to about 3,000 tons. Japanese production of potassium salts from domestic raw materials amounted to about 10,000 tons.

In 1940, the Formosan Government, which imported all potassium salts from Japan before the war, was reported to have started organizing a large company for the production of potassium salts from molasses in an attemrt to increase Japan's self-sufficiency.

By 1942, the supply became so critical that potassium salts were put on the critical list of products of major importance to the Japanese war potential and a special board was organized to increase production by removing the difficulties hindering greater production. This board was formed by the Chemical Control Organization of Japan and consisted of representatives of the Potash Control Organization, the army, manufacturers, and agriculturalists.

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Post-war problems.

The Japanese potassium salt industry is not likely to create any serious post-war problems as domestic production is small. Dismemberment of the Japanese Empire will have no serious repercussions as little or no potassium salts are available in Empire areas and the small amount formerly reexported to Formosa can be supplied directly from abroad.

After the war, world supply of potassium salts will be in excess of world requirements and imports into Japan, lacking any regulation by the authorities, will be limited only by Japanese demand, which in turn will be limited by amounts of foreign exchange available for the purchase of potassium salts. This combined with lower industrial consumption will probably reduce total consumption of potassium salts. Because such a large proportion of the potassium salts used in Japan was consumed in agriculture, however, a considerably reduced supply would effect the yield of certain crops to some degree, thereby reducing the foodstuffs available from domestic sources.

* * *

(See also the reports in the series on "Nitrogen" and "Phosphate rock.")

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APPENDIX

The following supplemental data, though somewhat extraneous to the purport of this report, show information which may prove of value on the production of some of the more important chemical salts (table 10) and the production (table 11) and consumption (table 12) of potassic fertilizer salts at the prefecture level.

Table 10.- Potassium salts: Production [1] of specified chemicals in Japan, annual, 1928-39, averages, 1928-32 and 1933-37

(In metric tons)

Year	Potassium chloride	Potassium sulfate	Potassium nitrate	Potassium bichromate	Potassium iodide	Prussian blue	Potash alum
1928	688	3,852	1,014	2/	41	2/	3/ 4,503
1929	660	2,334	911	801	48	175	4,834
1930	959	1,591	997	675	52	154	11,708
1931	3/ 718	420	893	742	81	189	3/ 5,084
1932	3/ 1,062	3/ 1,006	1,643	1,008	59	192	3/ 6,390
Av., 1928-32	817	1,841	1,092	807	56	178	6,504
1933	1,173	251	3,094	1,270	58	3/ 342	3/ 7,484
1934	3/ 886	3/ 26	2,662	1,521	56	360	3/ 9,083
1935	1,712	3,180	3,019	1,297	65	326	9,423
1936	1,468	307	3,892	1,907	33	412	3/ 10,130
1937	1,060	7,638	4,883	2,247	50	419	3/ 13,926
Av., 1933-37	1,260	2,280	3,510	1,648	52	372	11,809
1938	2,297	3/ 2,794	3/ 6,821	2,211	44	351	4/

1/ Production principally from imported raw materials. Data on potassium hydroxide, carbonate, permanganate, and chlorate are not available.

2/ Not available.

3/ Partly estimated from data on value of production.

Source: Kojo Tokei Hyo, 1937.

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Table 11.- Potassium chloride, potassium sulfate, and other potash salts: Production in Japan, by prefectures, 1937 and 1938

(In metric tons)

Prefecture	1937	1938
Potassium chloride:		
Osaka	402	-
Mie	-	135
Other 1/	86	1
Total	488	136
Potassium sulfate: 2/		
Kanagawa	5,740	9,350
Chiba	1,618	4,129
Hyogo	270	67
Other 3/	143	11
Total	7,771	13,557
Other potash salts:		
Kanagawa	9,829	-
Osaka	1,038	-
Mie	-	3,540
Shiga	-	2,883
Okayama	141	529
Hokkaido	-	996
Other 4/	12	32
Total	11,020	7,980

1/ Includes Yamaguchi, Ibaraki, and Nagasaki.
2/ Production from imported potassium chloride.
3/ Includes Mie and other unspecified.
4/ Includes Fukushima, Ibaraki, Jamanashi, Tokyo, Yamaguchi, and other, unspecified.

Source: Compiled from the Hiryo Nenkan and Kojo Tokei Hyo.

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Table 12.- Potassium salts: Consumption [1] of potassic fertilizer salts in direct application, in Japan, by prefectures, 1937

(In metric tons)

Prefecture	Potassium sulfate	Potassium chloride	Other potash salts	Total
Aichi	456	474	-	930
Akita	662	-	-	662
Aomori	-	-	1,266	1,266
Chiba	2,685	71	-	2,756
Ehime	1,699	-	-	1,699
Fukui	563	635	51	1,249
Fukuoka	750	244	-	994
Fukushima	789	-	-	789
Gifu	920	181	648	1,749
Gumma	5,475	5,626	168	11,269
Hiroshima	2,347	324	-	2,671
Hokkaido	9,217	465	-	9,682
Hyogo	1,894	-	-	1,894
Ibaraki	4,423	108	344	4,875
Ishikawa	2/	2/	2/	2/
Iwate	791	-	-	791
Kagawa	1,393	203	18	1,614
Kagoshima	693	-	-	693
Kanagawa	1,200	75	150	1,425
Kochi	2/	2/	2/	2/
Kumamoto	413	-	-	413
Kyoto	143	153	31	327
Mie	376	57	-	433
Miyagi	1,987	100	-	2,087
Miyazaka	271	-	-	271
Nagano	1,169	-	418	1,587
Nagasaki	675	-	261	936
Nara	-	-	459	459
Niigata	1,510	1,269	363	3,142
Oita	605	-	-	605
Okayama	2,889	-	-	2,889
Okinawa	502	-	-	502
Osaka	557	4,101	-	4,658
Saga	217	847	-	1,064
Saitama	3,059	459	180	3,698
Shiga	415	6	35	456
Shimane	752	104	48	904
Shizuoka	3/	-	-	3/
Tochigi	2,615	136	433	3,184
Tokushima	750	-	-	750

See footnotes at end of table.

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Table 12.- Potassium salts: Consumption 1/ of potassic fertilizer salts in direct application, in Japan, by prefectures, 1937-Continued

(In metric tons)

Prefecture	Potassium sulfate	Potassium chloride	Other potash salts	Total
Tokyo	1,179	18	131	1,328
Tottori	1,391	153	-	1,544
Toyama	1,207	-	4,763	5,970
Wakayama	822	130	-	952
Yamaguchi	275	103	-	378
Yamagota	1,005	420	-	1,425
Yamanashi	850	101	724	1,675
Total	61,591	16,563	10,291	88,445

1/ Data shown represent the amount of potash applied directly to the soil and do not include the amounts consumed in commercial fertilizers.
2/ None shown.
3/ Less than 1 metric ton.

Source: Compiled from Hiryo Nenkan, 1938-40.

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WHEAT AND WHEAT FLOUR

Introduction and summary

Until 1932, despite sizable wheat flour exports, Japan proper was a heavy net importer of wheat. Production was about 31 million bushels, imports about 25 million bushels, and exports about 11 million bushels (wheat equivalent of flour exports). Thereafter, however, chiefly because of rapidly increasing production, Japan changed its position to become a net exporter of wheat (in the form of wheat flour). In 1938 Japan exported 15 million bushels of wheat and imported only 2.6 million bushels. Production in that year was 45 million bushels; by 1940 production had increased to 66 million bushels, although this is probably not a level of output which has been reached in most subsequent years.

The exchange situation created by developments in the wheat trade are indicated in the tabulation below, which shows the value in million of yen of Japan's imports and exports of wheat in the periods 1928-32, 1933-37, and 1938:

	1928-32	1933-37	1938
Exports	27.3	40.2	73.0
Imports	54.0	40.4	10.2
Net import (-) or net export (+)	-26.7	-0.2	+62.8

The 62.8 million yen credit indicated for 1938 is large in part because of a rapid appreciation in the unit value of exports, especially those going to Kwantung and Manchuria. On the basis of earlier unit values for wheat, the total net exports of wheat which occurred in 1938 would normally have created much smaller export credits.

Japan's dependence on Empire areas for its wheat supplies was negligible; some wheat was imported from Manchuria. The dependence upon Japan of most of the Empire areas and China for wheat flour was, however, considerable; these areas took almost all of Japan's exports. The dismemberment of the Empire would not of itself necessarily interrupt this trade. If, however, Japan is prohibited from exporting wheat in accordance with plans for the revision of Japanese agricultural output, some provision will have to be made, of course, for wheat shipments, probably as flour, to former Empire areas.

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If deemed necessary, Japan's exports of wheat could be virtually eliminated, thereby reducing either the acreage devoted to wheat within the

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country or the need for imports. The fact is, of course, that in recent years Japan was more than self-sufficient in wheat. If production were maintained near a 50 million bushel level, it would appear that without imports approximately the same consumption level as before the war could be maintained. Such a level of domestic production would reduce the area of land now apparently devoted to wheat production, thereby increasing the amount for use in growing other crops for domestic consumption. As little hard wheat is grown in Japan, imports of hard wheat to the extent of 2-4 million bushels annually for blending with domestic wheats for bread making, may be desirable, although they would not be essential. Imports of 2 million bushels of hard wheat at the 1938 price would cost about 8 million yen.

Description and uses

Practically all wheat grown in Japan is of the soft type. The utilization of wheat in Japan is somewhat different from its use in the United States, where normally about 70 percent of total consumption is as food and the remainder as seed or feed. Of the total wheat consumed in Japan in 1930-31, 71 percent was made into flour, 1/ 21 percent used in sauces, 1.3 percent in pea-cheese and bean paste, 1.9 percent for seed, and 4.8 percent for feed and other items. In 1933-34, 50 percent of the wheat flour was used in the manufacture of noodles, vermicelli, macaroni, and similar products, 14 percent in making bread and rolls, 25 percent in cakes, dumplings, and sweet goods, and 10 percent in miscellaneous items. 2/

Summary of prewar supply

Japan changed from an importer of about 14 million bushels of wheat annually in the period 1928-32 to an exporter of approximately the same amounts in the years just before the war. The annual average production of wheat in Japan proper increased from 30.6 million bushels in 1928-32 to 46.5 million bushels in 1933-37; during the same period, total imports (including small amounts of flour in terms of wheat) decreased from 25.2 million bushels to 15.0 million bushels. Exports (including wheat milled-in-bond and exported as flour) increased from an annual average of 11.2 million bushels in 1928-32 to 15.8 million bushels in 1933-37. The annual average consumption per capita decreased slightly during these periods from 0.70 to 0.66 bushel. (See table 1.)

Nature of productive process

Wheat is grown to some extent throughout Japan proper but its greatest concentration is in the level areas on the Island of Kyushu, in Kagawa Prefecture on Shikoku, in Hyogo Prefecture in Okayama, in [illegible] and just north and northeast of Tokyo. It is grown chiefly as a winter crop along with hard and common barley, mostly on double-cropped land. South of

1/ Of all the wheat produced in the country or imported the proportion made into flour was larger, and increased as flour was exported in larger amounts.

2/ Data from "Japanese Self-Sufficiency in Wheat," Wheat Studies, Food Research Institute, Stanford University, Vol. XII, No. 3, November 1945.

PURL: http://www.legal-tools.org/doc/8dcb4

Table 1.- Wheat, including flour in terms of wheat: Production, imports, exports, and apparent consumption, Japan proper, 1928-39, averages 1928-32 and 1933-37

(Quantity except per capita in thousands of bushels)

Year	Production	Imports from-- Empire areas 1/ 2/	Imports from-- Other	Imports from-- Total	Exports to-- Empire areas 2/	Exports to-- Other	Exports to-- Total	Net imports(-) or net exports(+)	Apparent consumption Total	Apparent consumption Per capita
										Bushels
1928	30,812	3,373	21,212	24,585	6,331	4,148	10,479	-14,106	44,918	0.73
1929	30,496	1,694	25,861	27,555	8,704	3,792	12,496	-15,059	45,555	.72
1930	29,537	27	18,771	18,798	4,752	4,346	9,098	-9,700	39,237	.61
1931	30,892	26	26,832	26,858	5,226	4,434	9,660	-17,198	48,090	.74
1932	31,336	631	27,560	28,191	10,753	3,315	14,068	-14,123	45,459	.68
Average, 1928-32	30,615	1,150	24,047	25,197	7,153	4,007	11,160	-14,037	44,672	.70
1933	40,410	745	18,828	19,573	16,977	1,710	18,687	-886	41,296	.61
1934	47,660	76	18,029	18,105	16,882	384	17,266	-839	48,499	.71
1935	48,718	1,053	15,742	16,795	19,547	1,281	20,828	+4,033	44,685	.65
1936	45,192	706	12,029	12,735	9,981	1,111	11,092	-1,643	46,835	.67
1937	50,407	715	6,852	7,567	6,880	4,298	11,178	+3,611	46,796	.66
Average, 1933-37	46,477	659	14,296	14,955	14,053	1,757	15,810	+855	45,622	.66
1938	45,244	838	1,779	2,617	12,299	5,760	18,059	+15,442	29,802	.41
1939	61,086	112	1,328	1,440	11,978	1,337	13,315	+11,875	49,211	.67
1940	66,135									
1941	53,805									

1/ Does not include exports, if any, of wheat or wheat flour from Formosa or Mandated Islands to Japan as wheat and wheat flour are not separately classified in their export statistics.

2/ Imports from Empire areas include, where available, exports from Korea and Formosa to Japan plus imports from Manchuria, Kwantung and the Mandated Islands. Exports to Empire areas include, where available, imports into Korea and Formosa from Japan plus exports to Manchuria, Kwantung, and the Mandated Islands.

Source: U. S. Department of Agricultural Agricultural Statistics; Annual Return of the Trade of Formosa, The Trade and Shipping of Korea; Annual and monthly returns of the trade of Japan.

Note.- Wheat flour was converted to a wheat equivalent at 100 pounds of wheat equivalent to 72 pounds of flour.

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Tokyo wheat competes for the available acreage largely with naked barley and north of Tokyo it competes with common barley. These three cereals account for a large part of the winter crops of Japan. In Hokkaido, a small quantity of hard spring wheat is produced. The principal summer crop in irrigated areas is rice but in the upland areas such crops as corn, potatoes, tobacco, and beans are important.

Winter wheat is sown from September to December and harvested in June; some spring wheat is sown in April and May and harvested in August. Because of its longer growing season wheat has to be planted earlier in the fall and harvested later in the spring than barley.

Production

For several years previous to 1933, the acreage, yield per acre, and total production were about constant at about 1.2 million acres with a yield of about 25 bushels per acre, and production of 30 million bushels. As a result of the Five-Year Wheat Plan production increased sharply, consequent not only upon increased acreage but also increased yields per acre as a result of greater applications of fertilizers and the use of superior seeds and improved techniques. Production continued to increase and reached a peak of 66.1 million bushels in 1940. (See table 2.)

Table 2.- Wheat: Acreage, yield per acre, and total production, Japan, 1928-41, averages, 1928-32, and 1933-37

Year	Acreage	Yield per acre	Total production
	1,000 acres	Bushels	1,000 bushels
1928	1,201	25.7	30,812
1929	1,213	25.1	30,496
1930	1,204	24.5	29,537
1931	1,228	25.2	30,892
1932	1,247	25.1	31,336
Average, 1928-32	1,219	25.1	30,615
1933	1,511	26.7	40,410
1934	1,589	30.0	47,660
1935	1,627	29.9	48,718
1936	1,693	26.8	45,192
1937	1,776	28.4	50,407
Average, 1933-37	1,638	28.4	46,477
1938	1,777	25.4	45,244
1939	1,827	33.4	61,086
1940	2,024	32.7	66,135
1941	2,027	26.5	53,805

Source: U. S. Department of Agriculture, Agricultural Statistics.

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Production of flour

Statistics on production of flour in Japan are meager. There are no official statistics on mills employing less than 5 operatives. An estimate 1/ made in 1935 concluded that the normal consumption of small mills amounted to 6.6 million bushels and of the large commercial mills to 31.8 million bushels. Wheat produced in Japan yields about 67 percent flour as compared with about 72 percent in the United States and Canada. On this basis the quantity of flour produced from 38.4 million bushels would be about 15.4 million 100-pound bags. In 1934, the small mills were given a subsidy of 300,000 yen. Trade estimates indicate that about 7,000 small milling machines operated in 1933 and about 9,000 in 1935.

Imports

Of the combined total quantity of imports of wheat and wheat flour (in equivalent of wheat) into Japan proper, wheat constituted 98 percent and flour only 2 percent. Total imports reached a peak of 28.2 million bushels in 1932 and decreased to 7.6 million bushels in 1939. Because of the change in prices, the peak year of total value of imports did not occur in the same year as the peak of imports. The value of imports reached a peak of 72.5 million yen in 1929 and amounted to only 5.1 million yen in 1939. (See table 3.)

As stated previously, a large part of the imports of wheat was ground into flour and exported. In 1928-32, annual average net imports (imports less exports) amounted to 14 million bushels, but in 1933-37, the annual average imports were less than exports. (See table 1.)

Imports of wheat by principal sources.--Most of the imports of wheat come from countries outside Empire areas. In most years Australia was the principal source of imports and Canada second in importance. In 1930, however, the United States was the principal source and was second in importance in 1934. No imports from the United States were made in 1938 or 1939. Imports from Australia were largely soft wheat while those from Canada were hard wheat. (See table 4.)

Imports of wheat flour by principal sources.--With the exception of 1939, Canada was the principal source of imports of wheat flour. The United States was second in importance in 1928-32, and was only slightly less important than Korea in 1933-37. In 1938, about 70 percent of total imports, which had declined precipitously, came from Manchuria. Imports, in 1939, increased sharply but the country detail is not available. (See table 5.)

PURL: http://www.legal-tools.org/doc/8dcb4

1/ Food Research Institute, Stanford University, Wheat Studies; "Japanese Self-Sufficiency in Wheat," Vol. XII, No. 3, November 1935, p. 90.

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Table 3.- Wheat and wheat flour: Value of imports 1/ into Japan proper, annual, 1928-39, and averages, 1928-32 and 1933-37

(In thousands of yen)

Year	Value	Year	Value
1928	68,986	1933	46,311
1929	72,533	1934	41,094
1930	43,819	1935	44,548
1931	33,440	1936	37,750
1932	51,356	1937	32,450
Average, 1928-32	54,027	Average, 1933-37	40,431
		1938	10,236
		1939	5,118

1/ Exports from Korea and Formosa to Japan plus imports into Japan from Manchuria, Kwantung, and all foreign sources.

Exports

Exports of wheat as such from Japan to foreign sources are not separately classified, but they are known to be relatively small. Import statistics of Korea and Formosa show that small quantities of wheat come from Japan, amounting to about 5 percent of the total value of exports of wheat flour in 1933-37.

Exports of wheat flour, on the other hand, increased from an annual average of 4.7 million 100-pounds bags valued at 27.3 million yen in 1928-32 to 6.5 million valued at 40.2 million yen in 1933-37, and amounted to 7.2 million 100-pounds bags valued at 73.0 million yen in 1938.

The bulk of exports (about 85 percent in 1933-37) went to Empire areas, of which Kwantung and Manchuria were the most important. A large part of the exports to foreign countries went to China. Prior to 1937 most of the exports of flour came from imported wheat mill-in-bond. After this date, because of the large domestic production, imports of wheat were not required to supply trade with the Empire areas or to foreign countries.

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Table 5.- Wheat flour: General imports into Japan proper and Karafuto, by principal sources, annual, 1928-39, and averages, 1928-32 and 1933-37

Year	Empire areas: Kwantung	Empire areas: Chosen (Korea)	Canada	United States	All other countries	All areas
	Quantity (100-pound bags)					
1928	1,755	1/	665	126,757	42,424	9,921	183,512
1929	390	1/	852	60,693	82,816	7,271	152,028
1930	5	1/	2,213	237,997	192,753	13,821	432,289
1931	1,194	1/	4,777	95,190	22,883	9,231	131,275
1932	-	-	10,550	40,897	8,192	5,803	65,442
Average, 1928-32	669	-	3,991	110,007	60,813	9,209	193,509
1933	-	1	20,[illegible]	10,937	2,668	6,111	32,685
1934	1	3	2,639	11,478	6,487	4,222	24,830
1935	-	3	4,300	30,594	4,571	10,632	50,100
1936	17	3	1,378	484,910	4,085	7,267	497,660
1937	232	9,931	6,360	182,812	6,974	574	206,883
Average, 1933-37	70	1,988	5,530	144,146	4,356	5,762	162,452
1938	-	2,210	2,691	134	579	290	11,904
1939 2/			5,303			59,943	65,246
	Value (1,000 yen)						
1928	11	1/	5	830	279	66	1,191
1929	2	1/	7	410	517	46	982
1930	3/	1/	13	1,147	1,028	77	2,265
1931	4	1/	20	350	89	27	490
1932	-	-	51	208	50	22	331
Average, 1928-32	3	-	19	589	393	48	1,052
1933	-	3/	61	64	21	33	179
1934	3/	3/	18	79	44	23	164
1935	-	3/	27	226	41	59	353
1936	3/	3/	11	2,387	39	46	3,483
1937	3/	93	56	1,778	69	6	2,005
Average, 1933-37	3/	19	35	1,107	43	33	1,237
1938	1	93	41	1	6	3	144
1939 2/			64				778

1/ Not separately reported prior to 1932.
2/ Country detail not available in Japanese import statistics.
3/ Less than 500.

Source: Compiled from official annual and monthly statistics of Japan and Korea.

Note.- Converted to United States weights by applying the following factor: 100 kin = 1.32277 100-pounds bags.

PURL: http://www.legal-tools.org/doc/8dcb46/